

We claim:

1. A process for the preparation of macrocyclic ketones of the
5 formula I



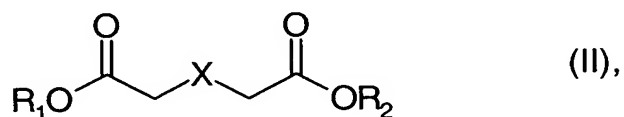
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where

- X is a mono- or polyunsaturated or saturated C₁₀-C₁₇-alkyl
15 radical which may optionally be substituted by a
C₁-C₆-alkyl radical,

by direct cyclization of compounds of the formula II

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where

- R₁, R₂, in each case independently of the other, may be
identical or different and are hydrogen or C₁-C₆-alkyl
and X has the meaning given above, in the gas phase over
30 a heterogeneous catalyst.

2. A process as claimed in claim 1, wherein the reaction takes
place at temperatures of from 200 to 600°C.
- 35 3. A process as claimed in either claim 1 or 2, wherein the
catalyst used is a fixed-bed catalyst.
4. A process as claimed in any of claims 1 to 3, wherein the
catalyst used is a heterogeneous catalyst comprising, as
40 active components, oxides, hydroxides or carboxylates of
subgroup I to VIII, or of main group II, III and IV.

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5. A process as claimed in any of claims 1 to 4, wherein the catalyst used is a heterogeneous catalyst comprising, as active components, oxides, hydroxides or carboxylates of subgroups I to VIII.

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6. A process as claimed in any of claims 1 to 5, wherein the catalyst used is a heterogeneous catalyst comprising, as active components, oxides, hydroxides or carboxylates of subgroup IV.

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7. A process as claimed in any of claims 1 to 6, wherein the catalyst is doped with oxides of main group I.

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8. A process as claimed in any of claims 1 to 7, wherein the catalyst used is TiO_2 .

9. A process as claimed in any of claims 1 to 8, wherein the catalyst used is TiO_2 doped with alkali metal oxides or alkaline earth metal oxides.

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10. A process as claimed in any of claims 1 to 9, wherein the compounds of the formula I are chosen from the group consisting of exaltone or civetone.

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11. A process as claimed in any of claims 1 to 10, wherein the compounds of the formula II are chosen from the group consisting of dimethyl 1,16-hexadecanedioate or dimethyl 1,18-octadec-9-enedicarboxylate.

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12. A process as claimed in any of claims 1 to 11, wherein the reaction is carried out in the presence of from 0 to 30% by weight of water, based on the compound of the formula II used.

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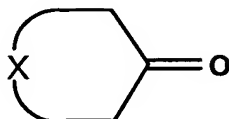
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Process for the preparation of macrocyclic ketones by Dieckmann condensation in the gas phase

5 Abstract

The present invention relates to a process for the preparation of macrocyclic ketones of the formula I

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(I),

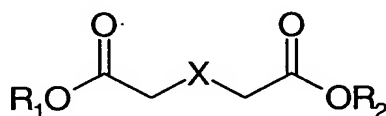
15 where

X is a mono- or polyunsaturated or saturated C₁₀-C₁₇-alkyl radical which may optionally be substituted by a C₁-C₆-alkyl radical,

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by direct cyclization of compounds of the formula II

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(II),

where

30 R₁, R₂, in each case independently of the other, may be identical or different and are hydrogen or C₁-C₆-alkyl and X has the meaning given above, in the gas phase over a heterogeneous catalyst.

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